

CLAIMS

I claim:

1. An illumination device, comprising:

- (a) a lighting circuit, comprising a plurality of light emitting diodes and a current limiting device such as a resistor, electrically connected in series between a positive wire of a battery connector and a negative wire of the battery connector,
- (b) the battery connector, for connecting the lighting circuit to a battery and for disconnecting the lighting circuit from the battery, the battery having a positive terminal and a negative terminal, the battery connector comprising the positive wire and the negative wire and means for electrically coupling the wires to their respective battery terminals, the positive wire being electrically coupled to the positive battery terminal and the negative wire being electrically coupled to the negative battery terminal when the battery connector is connected to the battery, at least one of the connector wires being electrically decoupled from its battery terminal when the battery connector is disconnected from the battery,

thereby providing a practical lighting unit with minimized number of components and cost.

2. The illumination device of claim 1, further including:

a battery holder, for affixing the battery on a surface which is approximately planar, the battery holder having a plurality of walls parallel to and closely fitting a plurality of sides of the battery which are perpendicular to the surface when the battery holder holds the battery with its largest face adjacent to the surface, the battery holder having means for attaching the battery holder firmly to the surface, the battery holder having at least one ceiling element for restraining the battery between the battery holder and the surface.

3. The illumination device and battery holder of claim 2, in which:

the battery holder attaches to the approximate center of a lower surface of a flying disc toy having a rim protruding toward the lower surface,

the illumination device attaches to the lower surface approximately adjacent to, and approximately encircling, the battery holder, and

the light emitting diodes point in a direction such that when the lighting circuit is connected to the battery, a beam of light from each light emitting diode points across the surface toward the rim, thereby illuminating the surface and the rim.

4. The flying disc toy, battery holder, and illumination device of claim 3, in which:

the illumination device is detachable from the flying disc toy and battery holder, and a replacement illumination device may readily attach to the flying disc toy and battery holder, thereby enabling simple color changes and user repairs of the illumination device alone.

5. The illumination device and battery holder of claim 2, in which:

the illumination device and battery holder may attach to an arbitrary object for illuminating the object at night.

6. The illumination device and battery holder of claim 5, in which:

the illumination device is detachable from the battery holder and from the object, and a replacement illumination device may readily attach to the battery holder and the object, thereby enabling simple color changes and user repairs of the illumination device alone.

7. An illuminated flying disc toy, comprising:

- (a) a lightweight circular disc, the disc having an upper surface and a lower surface when the disc is horizontal, the disc having an outer edge with a rim, the rim protruding in the direction of the lower surface, and
- (b) a separately constructed illumination kit, firmly attached to the lower surface, approximately at the center of the lower surface, comprising:
 - (i) a battery holder, for retaining a battery having a positive terminal and a negative terminal, the battery holder having means for firmly attaching the battery holder to the surface, the battery holder having means including a plurality of walls approximately perpendicular to the surface and at least one ceiling element approximately parallel to the surface, for restraining the battery within the battery holder;
 - (ii) means including a rugged connector for connecting a lighting circuit to the battery terminals and for disconnecting the lighting circuit from the battery terminals;
 - (iii) the lighting circuit, comprising a plurality of LEDs and a current limiting device such as a resistor, the lighting circuit elements being connected electrically in series and disposed approximately adjacent to the battery holder on the lower surface, the lighting circuit and the connector forming a continuous, electrically conducting path between the positive terminal and the negative terminal when the connector is connected to the battery terminals, and when the connector is disconnected from the battery terminals the lighting circuit and the connector do not form a continuous, electrically conducting path between

the battery terminals.

8. The illuminated flying disc toy of claim 7, in which:

each of the LED lamps creates a fairly narrow beam of light, and

the light beam of each LED lamp points across the lower surface of the flying disc toy toward the rim, thereby illuminating the lower surface and the rim.

9. The illuminated flying disc toy of claim 7, in which:

the illumination kit occupies a space near the center of the disc extending not more than half the radial distance from the center to the rim, thereby leaving unobstructed an area nearest the rim extending at least half the radial distance from the rim to the center of the disc.

10. The illuminated flying disc toy of claim 7, in which:

the lighting circuit and connector of the kit are detachable from the flying disc toy and the battery holder, and a replacement lighting circuit and connector may readily attach to the flying disc toy and the battery holder, thereby enabling simple color changes and user repairs of the illumination kit.

11. A battery holder for affixing a battery to a surface, the battery having a positive contact and a negative contact, comprising:

(a) means including a plurality of walls parallel to and closely encircling the sides of the battery which form the largest outline of the battery, the walls being approximately perpendicular to the surface, at least one ceiling element approximately parallel to the surface which joins the

distal ends of the walls farthest from the surface, and a cap, for retaining the battery within a pocket formed by the walls, the ceiling element, the surface, and the cap when the battery holder is attached to the surface; the walls having an open end enabling insertion and removal of the battery, the open end of the walls providing access to both of the battery contacts for a battery connector; the walls having a plurality of detents for mating to and retaining the cap; the cap, when attached to the detents of the walls with the battery inserted, partially enclosing the open end of the walls and retaining the battery within the pocket, and

(b) means for attaching the battery holder to the surface.